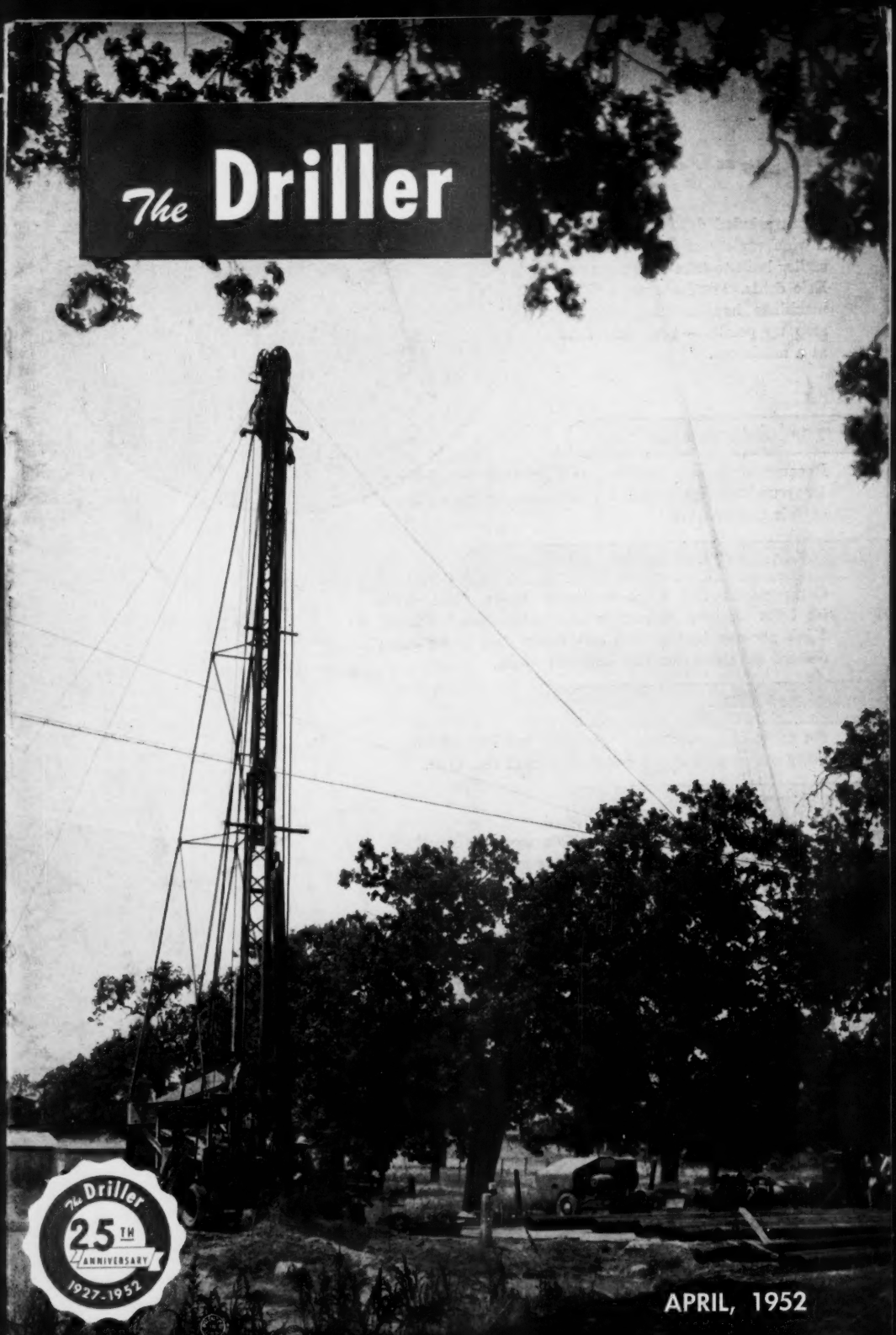
The Driller
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APRIL, 1952

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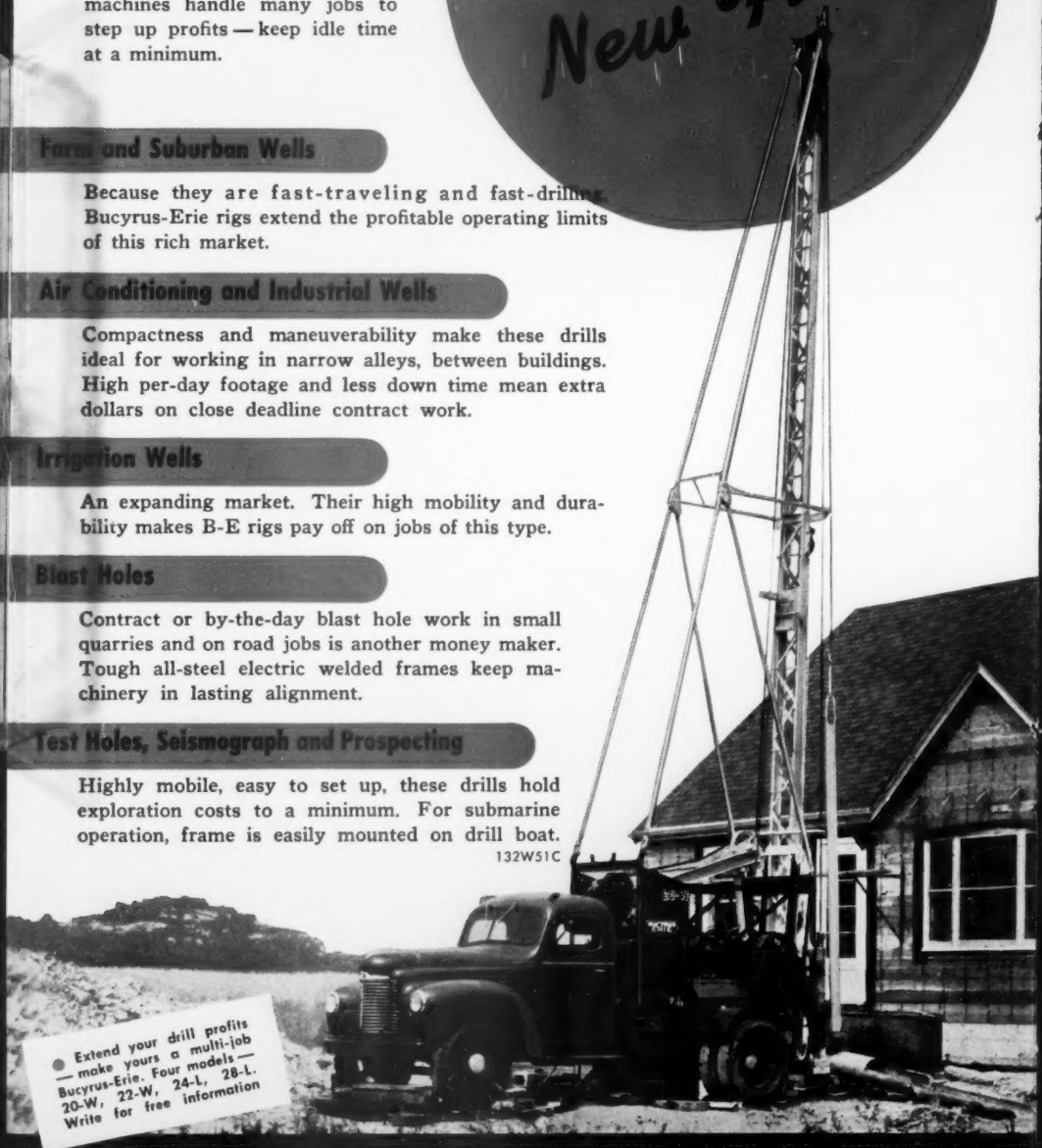

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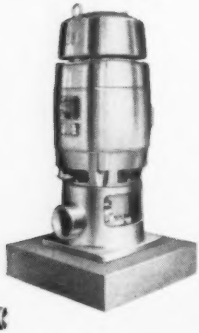

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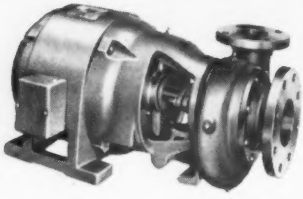

No rigid foundation is needed for this close-coupled pump and motor. May be mounted on a barn wall, floor or in a sling for portable use. Can be used as a booster for overhead irrigation or increased pressure in any system. Capacities to 12,000 gph. Heads to 500 feet. Write for Bulletin 52-2040.

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The Driller

THE MONTHLY MAGAZINE
FOR WATER WELL DRILLERS
Founded 1927

Vol. 26

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No. 4

April, 1952

On Our Cover . . . Fissured lava rock lies between surface and water on the municipal water well job done by H. L. Hall & Son at Ventura County California district #6 well. The rig is a Bucyrus-Erie 28-L and the 12-in. well, expected to finish at 600-feet, was down to 590 feet. (Orville Logan Snider Photo.)

Drilling 25 years 8

Here's the story of Clarence Hazen, a Connecticut contractor commemorating his silver anniversary in the water well industry. His business has been good and the future is bright. Systematic drilling plus salesmanship are the backbone of this success story.

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Published every month by Excavating Engineer Publishing Co.
South Milwaukee, Wisconsin

E. M. Heuston, Publisher

G. R. Wenzel, Editor
M. B. Jaeger, Managing Editor
W. J. Walsh, Consulting Editor
H. A. Burkhardt, Sales Manager

Address Communications to: The Driller, South Milwaukee, Wis.

Subscription price $1.00 per year
Single copies 25 cents

Canada and Foreign, $2.00 per year

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Drilling 25 years

Clarence Hazen, driller contractor, is shown on the job with one of his 20-W's.

Here's the story of Clarence Hazen, a Connecticut contractor commemorating his silver anniversary in the water well industry. His business has been good and the future is bright. Systematic drilling plus salesmanship are the backbone of this success story.

Drilling a 6-in. well for Burton L. Ives' store, located midway between Andover and Willimantic. The well was down 58 feet when this picture was taken.

WHEN it comes to drilling, every territory has its own peculiar problem. In some mountainous areas, the big problem is getting to location. In others, it's crevassed formations or caving sands that give the driller grief. But in the rugged highlands of eastern Connecticut, where Clarence E. Hazen has been drilling wells for the past 24 years,

the biggest problem to be solved is how to keep the well straight when drilling through the tough rock formations that prevail in the area.

Practically all of the rock through which Hazen drills is granite of a peculiarly hard and abrasive nature. In many instances this sub-surface formation does not lie flat but slants off into vertical seams or fissures. When a string of tools strikes one of these granite ledges, the bit usually follows the line of least resistance and goes off on a tangent. When this happens, it's a costly time-consuming job to get the hole running straight again. Occasionally it's an impossible one.

Fortunately, Hazen doesn't find himself drilling through this troublesome granite on every job. True, most wells in his operating territory finish in granite but, in some localities, he's in sand and gravel or good hardpan all the way down.

Born and raised in the area, Clarence now works out of his hometown, Andover, Conn. Although the son of a driller, Clarence got his first taste of water well drilling while working as a helper on Harry French's 35-W Armstrong rig in 1927. He worked for French, a local driller, for four years and gained valuable experience under the careful supervision of this veteran contractor.

In 1931 Clarence went into partnership with his dad, a father-son combination which continued until 1946 when he went into business for himself. The Hazens ran a William Bros. cam and treadle rig until 1939 when a 240 Speed Star was purchased. A year later this rig was replaced with a Bucyrus-Erie 22-W.

During the time Clarence worked with his father, he ran into his toughest drilling job to date.

"It was August, 1933 or 1934," Clarence said, "when we took this job, drilling a 6-in. residential well at Vernon Center, Conn. Neither dad nor I knew that we'd run into hard trap rock in the area, and that formation gave us plenty of trouble before we were finished.

"We drilled the well with our cam and treadle machine. The tool string was so small and so lightweight that we had to drill with slack line in order to make any headway at all. Of course, in drilling that way the hole wanted to run in all directions and we spent most of the day in twisting the drill cable back and forth in order to keep the hole

Hazen uses this 1½-ton 1940 Dodge platform truck for hauling supplies to the well site. He also owns a 1951 ¾-ton Studebaker pickup truck (not shown here).

While drilling a 6-in. well on the outskirts of Willimantic, Conn., Clarence handles the 20-W's controls. That's Jim Currie (left) and Elmer Remsen (right). They ordinarily operate Hazen's two rigs.

A one-piece pipe derrick off an old Star rig was made into a sign-post by customer Ives.

reamed round and to prevent key seating or a flat hole.

"Drilling in that kind of rock with the equipment we had would make the calmest man a nervous wreck within two weeks," Clarence continued. "But, we finally worried it down to a depth of 214 feet where we couldn't lower the water more than 30 feet from the surface using a 15-gal. bailer and making three trips a minute.

"The well was finished the following March. Dad's profit on that job was one that he never cared to discuss. He took the job for about $3.50 or $4.00 per foot and I know that job will stand out in both our memories as long as we live."

In 1946, Clarence decided to go into business for himself. He bought his dad's 22-W, and then he bought out Harry French who still had the Armstrong 35-W. Clarence replaced the Armstrong rig in November, 1949, with a Bucyrus-Erie 20-W, and the 22-W in October, 1951, with another 20-W.

With these two rigs Clarence covers a territory centering in Andover and branching out within a 40-mile radius of the city. Both machines are truck-mounted, the older one on a 3-ton 1940 D-40 International, the newer one on a 2-ton 1946 Chevrolet. Elmer Remsen runs one of the rigs with Jim Currie operating the other. Clarence alternates between the two machines and keeps them out of trouble.

The yearly volume of work is evenly divided between farm wells and those drilled for rural or suburban residences. The wells are usually six inches in diameter and range from 100 to 400 feet in depth, depending on the location. This latter figure, Clarence pointed out, represents a considerable lowering of the water table in his territory. "Twenty years ago," he said, "we did good to go down 100 feet for water here.

Now, we often go down 200 feet on an ordinary job."

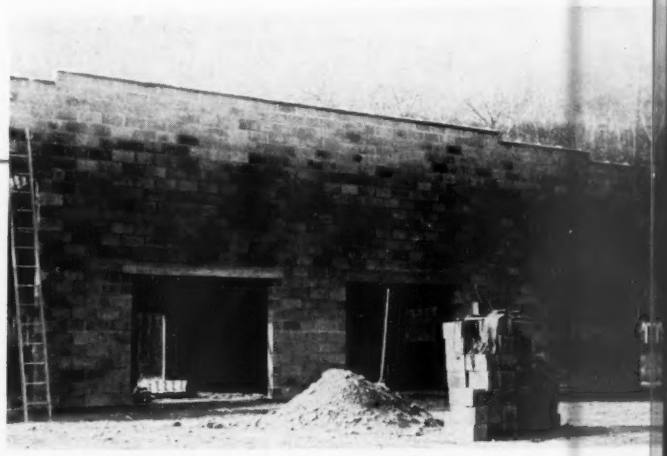
In 1949 Clarence drilled his deepest well to date, a six-incher put down on Andrew Kay's poultry farm at Scotland, Conn. This was the second job he handled with the first 20-W.

He was down 358 feet when he had to pull the 20-W off the job because he had only 400 feet of cable on the rig. Moving in his 22-W, he drilled on down to 456 feet where Mr. Kay stopped him. On test, the well yielded little more than a trickle of water, less than one gallon per minute.

Believing he could get a better yield by drilling deeper, Clarence wanted to go on. Mr. Kay, however, wanted him to shoot the well, hoping to increase its flow in that way. So Clarence assisted by Ray and Bill Harris, made up 80-lb. strings of dynamite containing 10 sticks (60% special gel) to a bundle. Attaching eight or ten bundles to a piece of clothesline, they dropped them to the bottom of the hole and set off the charge. The well's yield was not increased, however.

The fastest drilling job Clarence has handled thus far was putting down a 6-in. residential well in the town of Tolland, Conn. Using his 22-W, he went down 118 feet (14 feet to bedrock and 104 feet in rock), completing the well in 1½ days. This was an extraordinary job, considering that 12-20 feet is a fair drilling average per ten-hour day in Clarence's territory.

Clarence, who devotes his business solely to well drilling, runs his rigs year 'round. He doesn't handle sales or servicing of pumps. Business the past year, he says, has been 100% perfect. He is active in the Connecticut Water Well Drillers' Association.



This combination garage-workshop is being built alongside Hazen's home on the outskirts of Andover.

Jim Currie, one of Clarence Hazen's two employee's, operates one of the two rigs. Elmer Remsen operates the other rig.

VIBRATING Wells to Boost Yield

By H. A. Mylander, A.S.M.E.
District Engineer
Water Supply Analysts, South Pasadena, California

Part II

Method and effectiveness

This is the second installment on vibratory explosives to redevelop and develop wells and to remove growth from perforated casing as used in particular areas of the country.

THE perfected method of removing growth from casing by the vibratory method involves the use of special explosives, spaced on various leads to correspond with the perforated area. This prepared firing string is introduced inside the well casing while the pump is still installed, it being only necessary to suspend the pump assembly some three or four feet above the well to facilitate access. After the firing line is in position with the explosives opposite the perforated area, the explosives are detonated at predetermined time intervals by means of a special firing mechanism. The explosives produce a continuing series of shock waves of relatively long duration, safe to use in various casings, yet powerful enough to shatter and dislodge obstructions in the perfora-

FIG. 1
BEFORE VIBRATION
PERFORATIONS PLUGGED, VERY POOR FLOW CONDITION

FIG. 2
AFTER VIBRATION
PERFORATIONS COMPLETELY CLEARED EXCELLENT FLOW CONDITION

FIG. 3
CLOSE-UP OF PERFORATIONS AND SHOWING CLEAN SEAM AND CASING SURFACE

EFFECT OF VIBRATORY EXPLOSIVES ON OUTSIDE OF HEAVILY ENCRUSTED CASING

tions or in the interstices of the surrounding formation. The gas bubble expands and contracts about ten times after each explosion, so the water is forced out through the perforations and back into the well ten times for each explosive. Upon completion of this cycle the second series of explosions are set off, and so on. Thus it is possible to use carefully calculated charges with sufficient force to dislodge or break up incrustation and wash it free in one simple operation, without removing the pump.

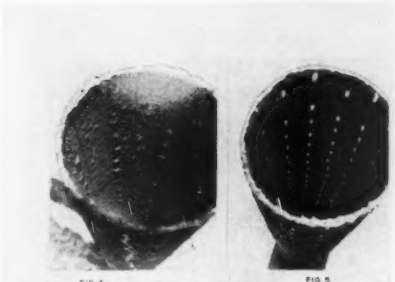


FIG. 4
SHOWING PERFORATIONS ALMOST COMPLETELY PLUGGED NOTE THE NODULAR ACCRETIONS BLOCKING THE PERFORATIONS.

FIG. 5
ALL PERFORATIONS CLEARED BY VIBRATORY EXPLOSIVE ACTION

EFFECT OF VIBRATORY EXPLOSIVE ON INSIDE OF WELL CASING

Effectiveness of Vibratory Explosives

In testing the effectiveness of vibratory explosives, actual specimens that have been in service fifteen years and accidentally removed from a well while it was being serviced were used. The specimen had a large part of incrustation jarred and wiped off while being pulled through the formation upon removal. An oversized bailer was stuck in the transition section at the top of the string of machine slotted casing. Jars and walking beams were used with such force that the rivets popped in some sections, and the casing was actually pulled from the well. This rough treatment left only the most secure incrustation. The specimen, being only six feet long, was lowered into an abandoned well with only two-thirds of a normal charge suspended inside, the purpose being to gradually increase the intensity of the explosion, until complete cleaning was achieved. Contrary to expectation, the first series produced the results shown in Figures 2, 3, and 5.

To study further the effectiveness of vibratory explosives, a concrete patch approximately ¼-in. thick was securely trowelled on the inside and another, of the same thickness, placed on the outside, Figures 8 and 9. The concrete was a hand mix of one part Portland cement, and two parts plasterer's sand, and allowed to set two days. It was subjected to the same two-thirds charge and was thoroughly dislodged and carried away.

The rivets of this section were badly corroded. As previously mentioned, a full section was so badly

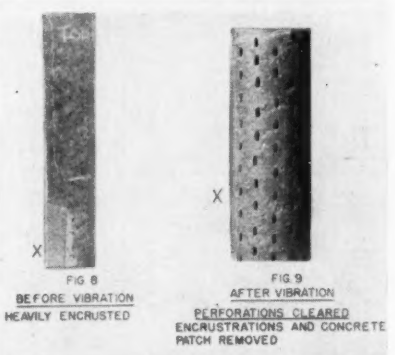
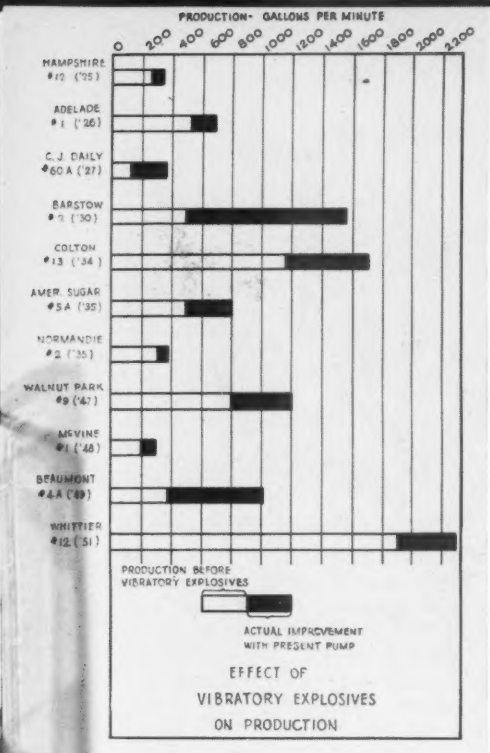
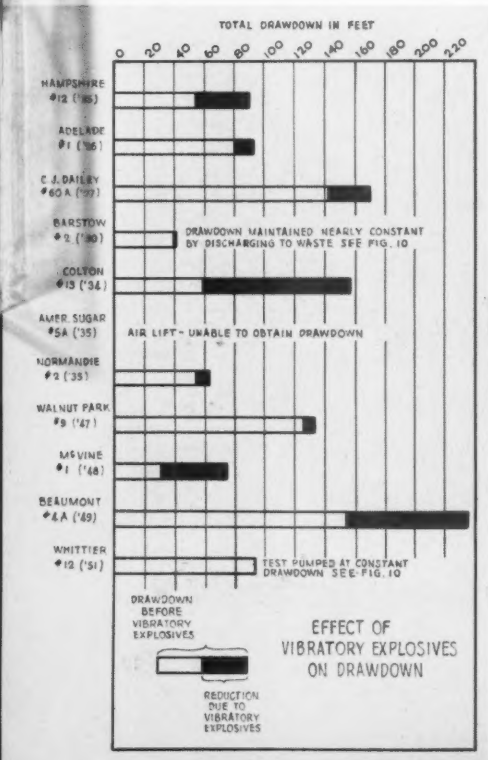


FIG. 8
BEFORE VIBRATION
HEAVILY ENCRUSTED

FIG. 9
AFTER VIBRATION
PERFORATIONS CLEARED
ENCRUSTRATIONS AND CONCRETE PATCH REMOVED

EFFECT OF VIBRATORY EXPLOSIVE ON HEAVILY ENCRUSTED CASING FURTHER PLUGGED BY CONCRETE PATCH (X)





weakened that under severe jarring the entire section was carried away. The enlarged view, Figure 3, reveals craters around these rivets on the outside row and many were completely ineffective on the inside row. Yet vibratory explosives, that were so effective in removing the incrustations and the concrete patches, did not shear a single rivet on the 6-ft. test specimen.

It may be concluded that a powerful charge of explosives is not required to clean the perforations of a well effectively, and that the sustained vibration accompanied by a washing action of the bubble-cycle is effective. As an illustration, to remove scale from a thin-walled pipe, a machinist's hammer and repeat blows, instead of a single sledge hammer blow, would be used.

Present Uses of Vibratory Explosives

Vibratory explosives are being used most successfully to improve wells by:

1. Redevelopment
2. Development
3. Removal of growth

1. *Redevelopment*

The original objective of this method was the redevelopment of "sick" wells by removal of incrustation or fines at the perforated area. This is still the most popular use. In the case of Beaumont Well No. 4 A, the improvement was 326%. The specific yield graph super-imposed on the head capacity curve of the pump reveals the improvement of pump efficiency with the consequent power saving. This suggests that vibratory explosives improves the well and improves the efficiency of the pump. The average improvement for all the wells with the exception of the new well—Whittier No. 12, was 158%. A retest of Colton Well No. 13, revealed an additional gain of 23% after continuous operation for one

year and four months. This continued improvement has been recorded in four separate instances.

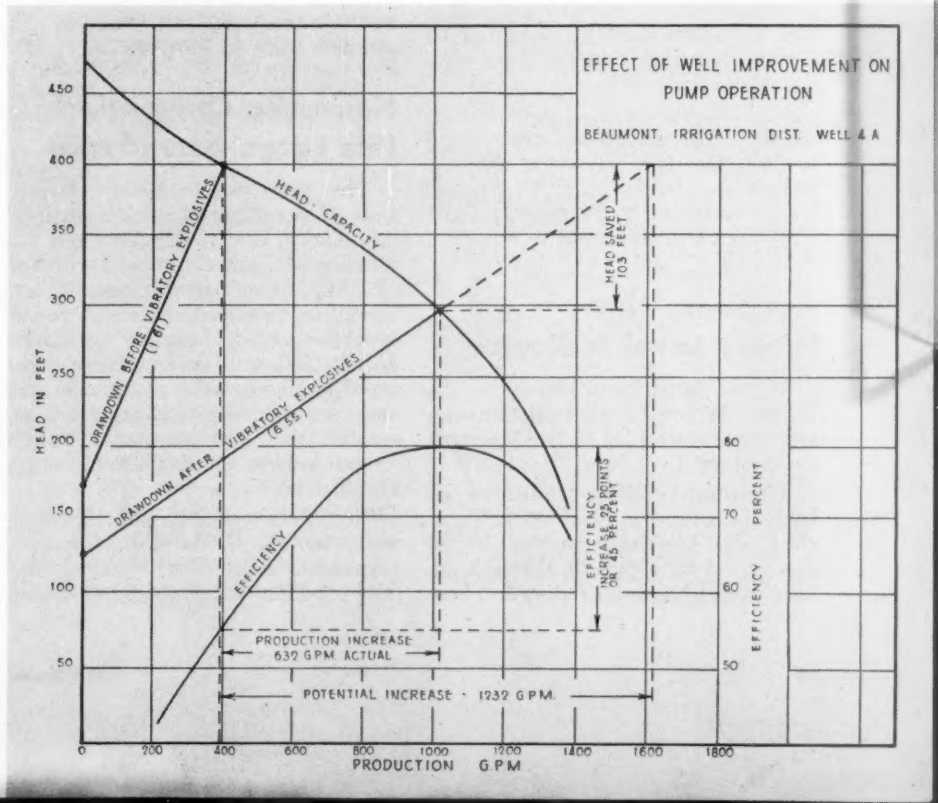
2. *Development*

If vibratory explosives are useful in redevelopment, then it might assist in developing wells that are logged with the "tight formation" and are slow in giving up their water. Three wells in a proven area and adjacent to good producers were treated with vibratory explosives. Two of the wells had been in service for two or three years, but had never been completely developed. The third, Whittier No. 12, was completely developed but did not produce with a specific yield comparable to neighboring wells. A test pump with a variable-speed gasoline engine drive was installed during the development period. This feature was used to maintain approximately 100-ft. pumping level, the variations being corrected to facilitate accurate measurement. The specific yield was very low and did not show promise. Vibratory explosives were used, and the well lost 100 gpm of production, due to rearrangement of the aquifer. Vibratory explosives may be credited with an additional 400 gpm from this well.

3. *Removal of Growth*

On many wells treated by vibratory explosives for removal of incrustation it was observed that, in addition to large quantities of incrusting material being pumped out of the well, there were always small particles to large sheets of growth, both dead and alive, in the discharge water. Recently, a well was observed to have a thick coating of gray and black growth on the inside of the discharge pipe. This growth had the consistency of custard, and was covered with an irregular thin layer of a leathery black substance. Its identity was not determined. This growth was permeating through the system

(Continued on page 26)


EFFECT OF WELL IMPROVEMENT ON PUMP OPERATION
BEAUMONT IRRIGATION DIST. WELL 4 A
HEAD IN FEET
PRODUCTION G.P.M.
EFFICIENCY PERCENT
HEAD - CAPACITY
DRAWDOWN BEFORE VIBRATORY EXPLOSIVES (1 61)
DRAWDOWN AFTER VIBRATORY EXPLOSIVES (6 55)
EFFICIENCY
HEAD SAVED 103 FEET
EFFICIENCY INCREASE 29 POINTS OR 45 PERCENT
PRODUCTION INCREASE 632 G.P.M. ACTUAL
POTENTIAL INCREASE - 1232 G.P.M.

NEWS of the month

Connecticut Association Elects; Joins NWWA

The annual meeting of the Connecticut Water Well Drillers Association, Inc., held Jan. 24, 1952, at the Bond Hotel, Hartford, resulted in the election of the officers for the coming year.

Staley H. Trask, Trask Artesian Well Drilling Co., Norwich, was elected president; Otto F. Lippolt, O. F. Lippolt Artesian Well Drilling Co., Danbury, is treasurer and Gene Bronzi, Suburban Water Well Drilling Co., Torrington, is the secretary.

Vice-presidents elected were Tony Leone, V. Leone and Son, 748 Burnside Ave., E. Hartford; Winthrop Phelps, E. O. Phelps, Bantam; John Warner, Box 244, Willimantic; Edward Gaines, Gaines Drilling Co., Rockville; Peter Pettini, Peter Pettini and Son, RFD 1, Stonington; George Fancher, Fancher Bros., Cedar Hill, Ridgefield.

NWWA Secretary, Robert Storm, spoke to the group and they voted to join the NWWA as a chapter. Winthrop Phelps, of E. O. Phelps, was elected as a Director to the NWWA for a three-year term.

Announce New Water Level Indicator

A new instrument known as the Master Water Level Indicator has been announced by Fisher Research Laboratory, Inc., Palo Alto, Calif.

The most significant advance has been the adoption of a new low cost electrode. Thus the expense due to the loss of an electrode through entanglement has been reduced. These new electrodes are flexible and are only three-eighths of an inch in diameter. They are reliable in performance and their function is not affected by the presence of large quantities of falling water above the pumping or static level.

The water level is indicated by a sharp needle deflection on a large instrument type current meter. The principal advantage to this type of indicator is that it will function satisfactorily even with a substantial short due to damage of the cable or electrode. The power supply is self-contained and is provided by one standard 45 volt dry cell battery.

The use of two conductor cable makes it unnecessary to make ground connections with the pump or casing. Hence, the instrument will function equally well in cased or uncased holes. Thus the instrument can be used in uncased test holes or in uncased wells in hard rock.

Nebraska Convention Has Large Attendance

The twenty-first annual convention of the Nebraska Well Drillers Association held in Lincoln, Feb. 21-22, was perhaps the most successful in the history of the association, according to a manufacturer's representative who attends regularly. Nearly 200 well drillers were registered for the two day conference and short course. Approximately 400 attended the Fun Fest and Dutch Lunch held at the Lincoln Hotel on the first night.

Newly elected officers of the association are F. D. Salmon, Concord, president; Erlo Cox, North Loup, vice-president and Andrew Olson,

Oakland, Treasurer. The new secretary is Vincent H. Dreeszen of the University of Nebraska.

The conference and short course was presided over by G. E. Condra and E. C. Reed of the University of Nebraska staff. Dr. Condra also delivered the principal address. Following the address at the dutch lunch, 14 association members were presented special awards for attending more than 15 annual short courses.

Receiving the certificates, awarded by the division of conservation and survey of the University of Nebraska were; Frank Cole, Loomis; Wendell Mikics, Cedar Bluffs; Andrew Olson, F. D. Salmon, C. F. Dimery, Beaver Crossing; A. A. Horn, Papillion; W. H. Kreoger, Litchfield; W. H. McGarvey, David City; Clifford Marx, Wisner; Robert Melcher, Omaha; William E. Muenchau, Eagle; F. M. Shaner, Ainsworth; A. M. Veatch, Mahaska; and Roy Cox, North Loup.

Included in the talks and discussions that were a part of the meeting were several drilling methods discussions; talks on drilling muds, sanitary wells, plastic pipe and Regulations on Steel and Copper Priority Ratings and Allotments.

Byron Jackson Co. Expands Facilities

Byron Jackson Co. has entered into an escrow agreement with Oliver L. Bardes, Cincinnati, owner of the A. D. Cook Pump Co., to purchase the assets of his organization located at Lawrenceburg, Ind., according to a company announcement. These assets will provide 150,000 additional square feet of manufacturing space and modern facilities which can be used for the production of Byron Jackson Centrifugal pumps and Cook vertical turbine pumps.

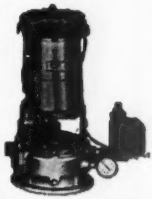
Increased product demand in the

KEEP PROFIT FLOWING IN with the Whitewater LINE

Handle the complete Whitewater line of deep and shallow well pumps, sump pumps and water softeners; meets every customers needs. You'll do more business because you're always set for sales! Here are three of Whitewater's easy-to-sell products.

Jet Type Deep Well Pumps

Quiet operation and outstanding efficiency characterize these pumps. Flexible pump and base design permit either vertical or horizontal installation. Rust proof materials and scientific balancing assure long, trouble-free service.



Cellar (Sump Pump) Drainers

Four styles available including all brass, brass fitted and standard models. Will deliver up to 3,200 gallons per hour without undue effort. These pumps are the strongest, most efficient submerged type pumps made.

Water Softeners

Famous for fine performance with even the most difficult types of water. Four styles and four sizes available. Both standard controls and Solo valve models.

WW

Whitewater PUMP COMPANY
Kidd Street, Whitewater, Wis.

Pump Handle Pete Says:

JENSEN Pumping Units satisfy!

Reliable water well drillers everywhere have learned that they can recommend a Jensen Pumping Unit without hesitation.

Customers like Jensens because they are reliable, sturdy built, and as fool-proof and trouble-free as any unit could possibly be. They cost very little to buy, and very little to operate. They are simple in design. Have a minimum of moving parts.

Drillers like Jensens because they are easy to install. And it's a fast, simple job for one man to counterbalance them perfectly.

If you are not acquainted with Jensen Units, write 1016 Fourteenth Street, Coffeyville, Kan., for facts and figures or ask your supply store to write.

JENSEN BROS. MFG. CO. INC.

Coffeyville, Kan., U.S.A.

Eastern markets necessitated the acquisition of additional manufacturing facilities in that part of the country. It is intended that production at the Lawrenceburg plant will be expanded in the near future. It is anticipated that the present dealer organization of the Cook Co. will be continued under the new ownership.

Announce New Small Turbine Pump

Development of a new water-lubricated lineshaft turbine type pump designed to fit into wells of 4-in. diameter and larger has been announced by Jacuzzi Bros., Inc., Richmond, Calif. To be known as the Jacuzzi 4, the pump is designed for homes and farms with deep wells, requiring a moderate but consistent water supply. It is suitable for sprinkler or open ditch irrigation and can be used with all pressure systems. It is available with a variety of motor sizes and hp ratings.

NPA Clarifies Dir. 4, CMP Reg. 6

The National Production Authority, U. S. Department of Commerce, does not require water well drillers to operate on advance contract schedules, Richardson K. Bronson, NPA's Assistant General Counsel, said in clarifying an apparent misunderstanding by the South Dakota Well Drillers Association of Direction 4 to Controlled Materials Plan Regulation 6.

Method Unchanged

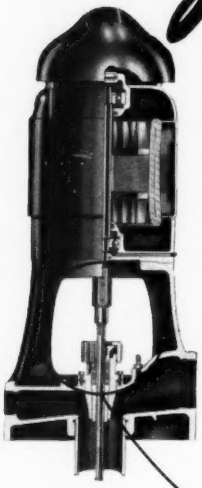
"It is recognized," Mr. Bronson said, "that water well drillers do not operate on the basis of advance contracts. Direction 4 does not require them to change their methods of operation. It merely requires them

COMPLETE PACKAGE TURBINE...

The New *Jacuzzi* 4

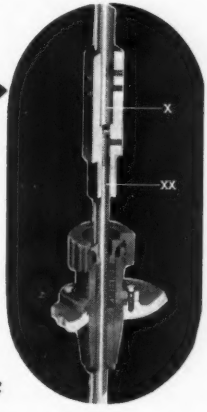
LINESHAFT TURBINE

For Wells 4" diameter and over



Here, at last, is a deep well turbine for all wells 4" diameter and over. This low cost Jacuzzi Pump is designed for homes and farms with deep wells, requiring a moderate but consistent water supply. The "4" is excellent for pressure system use and will serve well for irrigating either with sprinklers or open ditch. This water lubricated turbine includes all the latest features you usually find only in large, more expensive equipment. It uses a standard make, solid shaft motor for 1½, 2 and 3 h.p. installations and hollow shaft motors for 5 h.p. units. Recommend the Jacuzzi 4—it's easy to stock as a complete unit and is backed with years of experience in building turbines.

Check These Exclusive *Jacuzzi* Features



Perfect alignment between the shaft and the pump head is assured by the Jacuzzi 4 Line Fit Coupling. Note the line fit "X" and "XX" which are precision bored concentric with each other.

The removable bronze stuffing box with replaceable head bearing permits perfect alignment and centering of the stainless steel headshaft with the head by allowing the shaft to stand square.

Send today for Free literature

JACUZZI BROS. INC.

5327 Jacuzzi Avenue • Richmond, California

to anticipate their requirements on a quarterly basis for each project requiring not more than six tons of carbon steel and 200 lbs. of copper and copper-base alloys.

"If the water well driller has no advance contracts, there are other methods open to him to enable him to make an intelligent estimate of his future requirements. He can, for example, go back to the pattern of his business during a preceding year."

Answer Criticism

Answering criticism of the date for filing CMP-4C applications for allotments of controlled materials, Mr. Bronson explained that the time is set at 45 days before the start of each quarter to help water well drillers by giving them sufficient time to get on mill schedules after receiving their allotments.

The base period used in making CMP allotments to water well drillers conforms with the Defense Production Act, Mr. Bronson said. That act specifies that division of the available civilian supply of scarce materials be based "as far as practicable on the share received by such business under normal conditions during a representative period preceding June 24, 1950."

He indicated that because of seasonality in water well drilling, NPA may consider adopting a longer base period than the currently used base, the first six months of 1950.

Direction 4 to CMP Reg. 6 was issued Jan. 17, 1952, to provide a means by which water well drillers may obtain quarterly allotments of controlled materials in advance.

Reviewing four major provisions of the direction, NPA said:

1. A professional contractor drill-

For Maximum Gpm at Minimum Cost . . . Try

GLEASON

DRILLING MUD

● Hundreds of water well drilling contractors now are boosters for Gleason, the new type drilling mud that brings in your wells more quickly. It lets you drill farther ahead of your casing, makes pipe driving easier, helps lubricate the bit, floats out the cuttings. Laboratory and field tests prove Gleason builds a better wall to stop caving, yet washes out of the sand formation to assure a maximum Gpm with a minimum of washing and flushing. Write today for prices and full details.

Another **SPINKS** *Uniformity* **CLAY**

H. C. SPINKS CLAY COMPANY, Inc.

P. O. Box 829, Paris, Tennessee
First National Bank Building, Cincinnati 2, Ohio
2149 E. 37th Street, Vernon, California

Why Make Hole The Hard Way?

BUCYRUS ERIE

In hard formations like trap rock and quartzite or soft formations like lime or clay . . . no matter how tough or how easy the going might be, you'll find you can put down a well faster, more economically with a Bucyrus-Erie drill bit on your tool string.

Why? Because Bucyrus-Erie bits are built for efficient service on the basis of practical experience in all types of formations and in all parts of the world. Their field-proved design provides for a controlled accurate shape that includes:

1. A sharp, penetrating cutting edge that takes a real bite on each impact of the tools.
2. Large-area crushing faces for pulverizing the chips.
3. Long-reaming edges for cutting the hole round and smooth.
4. Deep, wide water-courses that allow more room for the cuttings and therefore require less frequent operation of the bailer.

Why not try a Bucyrus-Erie bit on your next drilling job? Write today for complete information on our complete line.

20A51C

BUCYRUS-ERIE COMPANY • South Milwaukee, Wisconsin

ing small wells must submit a 4C application each quarter for allotments of steel and copper for all wells he expects to drill in the following quarter, each of which requires not more than six tons of carbon steel and 200 lbs. of copper.

2. A professional contractor drilling larger wells must submit a separate 4C application each quarter for each well-drilling project for which he is authorized by the owner to act as prime contractor and which requires more than six tons of carbon steel and 200 lbs. of copper.

3. A home or farm owner drilling his own well may self-authorize his order up to two tons of carbon steel and 200 lbs. of copper.

4. Larger farm wells. If a farm well requires more than the self-authorization maximum (two tons of carbon steel and 200 lbs. of copper), the farmer's 4C application must be submitted to the county Production and Marketing Administration Committee, U. S. Dept. of Agriculture, in the county in which the well is to be located.

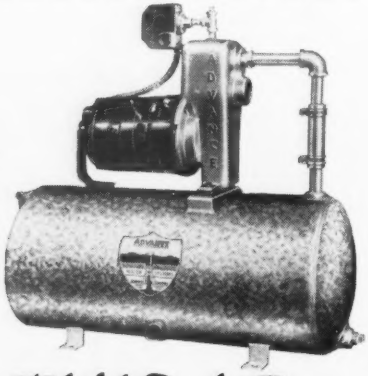
Submit Form

In addition, professional well drillers should submit (with their first application only) a special reporting form—CMP-65—needed by NPA to establish the amount of materials used in the base period. The form is available at Department of Commerce field offices.

No consideration can be given a CMP-4C application submitted by a well contractor for allotment of controlled materials unless he has filed the CMP-65 base period form with his first application, NPA cautioned all contractors.

(News continued on page 26)

Water System Dealers!



Left: New ADVANCE HZ "All-American" shallow well water system. Up to 975 g.p.h. . . . 100% self-priming . . . fully automatic. A sales-builder de luxe.

CLIP THIS AD

YOU'LL WIN SALES . . . BUILD GOOD WILL . . . SAVE YOUR PROFITS with the expanded line of ADVANCE high-capacity automatic water systems —3 to 300 g.p.m. for deep or shallow wells. Streamlined; efficient; durable.— Just clip this ad and mail it to office nearest you for complete details, plus copy of our *new 20-page color catalog describing complete line.* Do it now!

ADVANCE PUMP COMPANY

2531 NINTH STREET
Dept. D, Berkeley 10, Calif.

321 MARKET STREET
Dept. D, Hamilton, Ohio

Greatest Name in Cable Tools

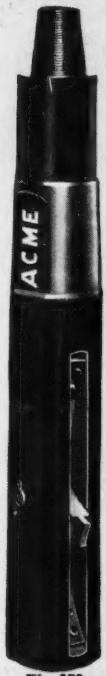
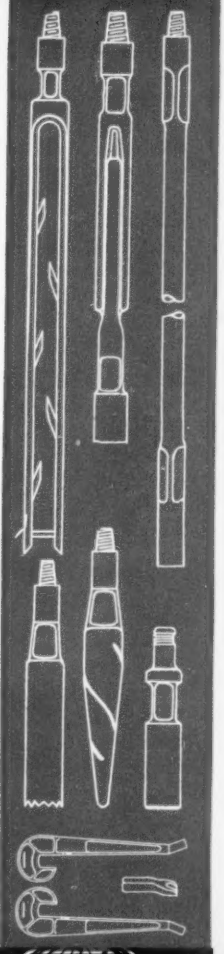


Fig. 270
Turtleback Perforator
Solid Body Type

The tool featured above — one of 95 in our new 32 page Catalog and Tool-use Manual — is fashioned by 51-yrs. of superior "know-how" . . . providing more of EVERY-THING you need in an Acme String.

Acme

TRUSTWORTHY SINCE 1900



Its Simplicity of Operation Makes It Most Popular Pipe Perforator With Water Well Drillers

Use Acme's (solid body type) Turtleback Perforator for perforating pipe in hole. Especially GOOD for heavy weight pipe. (Run on cable tools only.)

Lower tool to desired position and make first perforation by jarring up. Jarring down makes next cut. Then make other perforations, as needed, by alternately repeating these two operations. Withdraw from hole after any upward cut.

Acme's half-century reputation—for most Trustworthy Tools—backs our Turtleback Perforator. Its cutter is made of especially selected tool steel—exactly hardened—to withstand severest service. PREMIUM-quality steel—throughout—must meet our rigid analysis specifications. Correct heat-treatment, to electrical-automatic controls.

For full details, write for your free copy of Acme's new 32-page Catalog and Tool-use Manual—expressly compiled and packedful of valuable information for Water Well Drillers.

Acme Fishing Tool Co.

PARKERSBURG, W. VA.

ACME DRILLING & FISHING TOOLS Since 1900

To-be-Sure—Always Ask for Acme's.

BITS from the wit sharpener

A candidate for county sheriff was soliciting votes in a small town. After giving an attentive voter a fervent campaign speech, he asked for his support.

"Well, mister, I'll tell you—you're my second choice," said the voter.

The would-be sheriff pondered a moment. Then hoping to eliminate the man's first choice by some disparaging remark, he asked cheerfully, "and who is your first choice?"

"Well, sir, just anybody but you."

The doctor's waiting room was full, with every chair taken. Some of the patients talked for a while and then silence fell. Finally, one old man stood up wearily and remarked, "Well, I guess I'll just go home and die a natural death."

A bashful young man had been presented to a very modern young girl and for ten minutes he sat speechless, growing redder and redder and more embarrassed.

At length the girl said sweetly: "And now let's talk of something else."

A plumber was charged with an offense of which he was innocent. His defense was excellent, but his lawyer noticed that he seemed very nervous and disturbed as the jurors filed into place. "What's wrong?" the lawyer asked. "You need have no fear of the jurors." "I'm not so sure," replied the plumber. "There ain't a man there that don't owe me some money."

A Swede and a Finn entered the bar for several drinks. Without a single word of conversation they drank. Several hours and innumerable drinks later the Finn said, "Skol."

"Shuddup," said the Swede, "Did we come in here to drink or to talk?"

"I represent the Mary's Lamb Wool Company, madam. Would you be interested in some coarse yarns?"

"Well, yeah, if they're good ones, I might listen to a couple."

Man: "Do you know anything of my wife's whereabouts?"

Maid: "Yes, sir. She put them in the wash."

A quizzical expression came over the deacon as he read the drug store menu. "Say, boy," he called the soda jerker, "I know all about Shrove Tuesday, Ash Wednesday, and Good Friday, but what is Nut Sunday?"

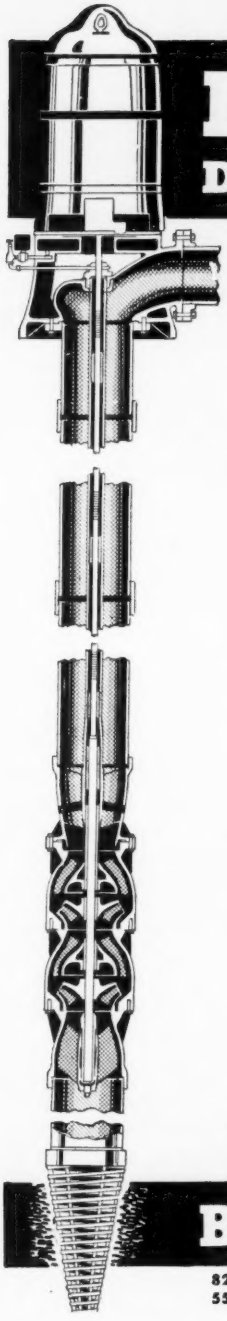
The modern youngster was asked to write an essay on his origin. He went home and asked: "Mother, where did Grandma come from?"

His mother surprised, answered: "Why Son, the stork brought her."

"And, mother, where did you come from?"

"Why the stork brought me, too; and Son, he also brought you."

The next day the child wrote the following essay: "There have been no normal births in our family for three generations."



BERKELEY
DEEPWELL TURBINES

A SIZE FOR EVERY PUMPING CONDITION

From a small 4" dual purpose turbine to the large irrigation models with capacities in excess of 3500 G.P.M.

WATER OR OIL LUBRICATED

Water Lube construction incorporates only the highest quality time-tested rubber bearings. Sleeve couplings of a hard, corrosion resistant material insure a long wearing dependable job.

OIL LUBRICATED ASSEMBLIES

combine extra heavy inner column, all bronze bearings, and accurately machined steel shafting into a unit unsurpassed in performance and wearing qualities.

SEMI-OPEN OR ENCLOSED IMPELLERS

Enclosed impellers of bronze or porcelainized cast iron, hand filed internally and carefully balanced. All bronze semi-open impellers available in the more popular sizes.

Illustrated at the left is a Model 1403HH, capable of capacities in excess of 2500 G.P.M.

BERKELEY PUMP COMPANY

829 BANCROFT WAY, BERKELEY 2, CALIFORNIA DEPT. R
556 TIFT AVENUE, S. W., ATLANTA, GEORGIA DEPT. R

"Beautiful" in the job they do —

Profit for the installer

Lasting satisfaction for the customer

UNIFLOW

Shallow well and deep well (Reciprocating & Jet)

Cellar Drainers

Water Conditioners (Softeners, Iron Removal Filters Sediment Filters, Neutralizers)

Uniflow "Spartan" is the finest Rod Type Deep Well Built Today! Send for Special bulletin on this and other of these fine UNIFLOW products.

Complete catalog on request.

UNIFLOW

Manufacturing Company
1526 E. Lake Road
Erie, Penna.

News . . .

(Continued from page 22)

W. D. Schneider Joins Barnes Mfg. Co.

Barnes Mfg. Co., Mansfield, Ohio, announce the appointment of William D. Schneider as National Manager, Pump and Water System Sales with headquarters in Mansfield.

Before joining the company, Schneider had spent 15 years with the Flint and Walling Co. His most recent assignment with F & W was that of Western Regional Sales Manager. He will direct the field activities of the Factory Representatives.

Vibrating . . .

(Continued from page 15)

with consequent detriment to the service meters and customers. Also, the production of the well was seriously curtailed. Vibratory explosives was used with excellent results. Production was actually increased from 790 gpm to 1,250 gpm.

Conclusions

While there is still much to be learned, and, as outlined in the opening paragraph, the use of vibratory explosives is limited only to wells that show particular symptoms, it appears that a new tool has been brought into use to assist both the hard pressed water utility to obtain more raw material and the well driller who desires to obtain more water from a stubborn well. It has been theorized that not only the old aquifers have been activated, but possibly new ones brought into use. This has been confirmed in numerous cases by taking water samples before and after. Analysis in the laboratory shows a marked difference in the characteristics of the water.

Specify THE PIPE WITH THE STRIPE!

For the driller: two new illustrated booklets describing CARLON flexible pipe and CARLON plastic well casing are now available. They tell how light-weight, corrosion-proof CARLON pipe facilitates rapid low-cost installation of water systems and CARLON well casing permits casing rotary and auger-drilled water wells with record speed.

CARLON CP

CARLON PRODUCTS CORPORATION

Write today for your copies of these informative booklets.

530-CP

CARLON PRODUCTS CORP.
10149 Meech Avenue, Cleveland 5, Ohio

Please send (without obligation) informative booklets on your CARLON Well Casing and CARLON "EF" plastic pipe.

Name_____ Title_____

Company_____

Address_____ State_____

BARGAIN Counter

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate· 60c per line. Minimum charge $2.40. No discounts; no commissions. Count your own copy to avoid delay. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Closing date — 10th of preceding month. Example — January issue closes December 10th. Be sure to address separate inquiries to each advertiser by using the correct box numbers. Mail Box inquiries care of THE DRILLER, South Milwaukee, Wis.

DRILLS FOR SALE

No. 40 Speed Star drilling machine mounted on '32 Diamond T truck. Drilling truck in good shape with 500 ft. ⅝ cable and sand line, almost new. Tools from 3½"-4"-5"-6", bailers, etc. Complete outfit goes, selling out to go into another business. E. Andrews, 206 Stuebenville, Peoria, Illinois, Phone Peoria 9035.

Bucyrus-Erie 21-W drill with 500' drill line, 500' sand line, and all necessary tools. Machine mounted on 1935 Diamond T two-ton truck. Contact Ralph L. Phillips, White Lake, New York.

71 Speed Star mounted on 1940 cab-over-engine Ford. Power hoist on telescoping 40 ft. derrick. Catheads and casing reel with 4-cylinder Continental motor, all in A-1 condition. One 2-ton 1949 F6 Ford. Drilling and fishing tools for 4", 5⅝" and 8" holes. Two 100-ton hydraulic jacks with 8" and 6" pulling ring and slips. Two trip spheres new for 4", 5⅝" casing. One 4" and 5⅝" bailer. One sand pump for 4" casing. Star Drilling Corporation, Box 94, Mays, Indiana. Phone 24F14.

DRILLS FOR SALE

Two Bucyrus-Erie 28-L drills semi-trailer mounted. All necessary tools & equipment for drilling wells from 5 to 13". 1945 Reo 6x6 tractor, 1949 Ford 2½-T 4x4, 1951 Ford 2-T 6x6 and 1951 Ford F2 pickup. The above equipment is in excellent condition. B. W. Moore, Rt. #2, Parkersburg, W. Va. Phone 8-4037.

Bucyrus-Erie 33-W, truck mounted, complete with 6" tools, ready to go. $2500.

Buda earth auger machine used on one job, practically new. Truck mounted two towers, several different size hole augers. $3500.

Barney A. Moravec, Penn Yan, New York.

No. 3½ wire line Keystone with 40 ft. all-steel derrick, rubber shock absorber at top. Powered with U-4 International engine, 1 year old. Built-in casing reel. Mounted on LWB International 5-ton truck. Price $2000 with 5⅝-in. tools. Phone or write H. A. Smith, Porter, Ohio. Phone 88275.

American all-steel wire line machine mounted on 5-ton Relay truck with dual pneumatic tired rear wheels. 32-ft. derrick with shock absorber in crown, pipe braces, and power derrick hoist. Powered by Willys Jeep engine with three-speed transmission. Price $1750. H. E. Smith, 303 E. Leith, Fort Wayne, Ind. Phone Harrison 4346.

No. 1½ all-steel Loomis Clipper, semi-trailer mounted with dual pneumatic rear wheels and trailer bracket. Powered by Chevrolet engine, just overhauled, with 3-speed transmission. 40-ft. all-steel telescoping derrick with shock absorber at top, tool guide, and pipe braces. Casing reel. Machine in good operating condition. Price $1000. Price with 4-in. tools and cable $1200. Write or phone Charles J. Zuber & Son, 2315 Wayne Trace, Fort Wayne, Ind. Phone Anthony 2403.

DRILLS FOR SALE

All-steel home-made spudder, semi-trailer mounted with dual rear wheels. 40-ft. derrick with Bucyrus shock absorber. 1000-ft. capacity. 2 years old. Complete with '37 Ford 1½-ton truck, $2500. Phone or write Raymond Anderson, Barlow, Ohio. Phone 12F4.

1947 #71 Speed Star mounted on '40 Chev. 1½-ton Thornton rear-end tandem drive truck. Rig just cleaned & painted, in storage 2 yrs., 40' mast, 47 h.p. Continental engine, dual catheads, blower mounted on rig, tool guide, complete string 6" tools. Price $4200.

Bucyrus-Erie 33-W on '37 Chev. 1½-ton truck, no tools. Price $2000. W. J. Rodgers, Gulliver, Mich. Phone 3392 after 7 evenings.

Bucyrus-Erie 22-W excellent condition, has casing reel, besides drilling and sand lines. Power mast-raising reel. Mounted on 2½ ton GMC tandem truck. With lines and tools $5000. Omaha Drilling Co., 624 Service Life Bldg., Omaha 2, Nebraska.

Two 55 Speed Stars, 1951 models, used 5 months. Both unmounted with telescoping masts, casing reels, double cat heads, electric starters. Rigs purchased new for contract job at $4400. Will sell for $3000 each. Extra parts we have will go with the rigs. Omaha Drilling Co., 624 Service Life Bldg., Omaha 2, Nebraska.

71 Speed Star, nearly new, 40 foot telescoping mast, drilling, sand and casing reels, double cat heads, power mast-raising reel. Rig fitted with Star rotary attachment consisting of guides, swivel, 4½"x 21' round splined kelly, and rotary table complete. This rig can do cable tool drilling to 1000 feet and can be converted to rotary rig in a few minutes. Rig is mounted on 1942 K-7 International truck. Complete with everything as is, $8500. Omaha Drilling Co., 624 Service Life Bldg., Omaha 2, Nebr.

(Continued on page 29)

DRILLS FOR SALE

(Continued from page 28)

Keystone #50 water well drill for sale. With calf reel, bull reel, mounted on International 10-wheel truck. A-1 condition. Immediate delivery. Price on request. Box 458

Two used machines, telescope derricks, truck mounted. Excellent condition. With or without tools. Priced to sell. Creelman Artesian Well Co., 38 Maple St., Dover, N. H.

Three well drilling machines, with tools 4 to 12 inches. Trucks, machines and cable in good condition. J. R. Neidig, R. #1, East Moline, Illinois.

Bucyrus-Erie 21-W mounted on 1½-ton truck including non-friction bearings on jack shaft, cat heads and 600 ft. of cable and sand line. Located in central Michigan. Box 459

Bucyrus-Erie 24-L complete with all tools, lines, dog-house, water pump, light plant, 1½-ton truck and pipe trailer. Located near Robinson, Illinois. Write or call Buckeye Supply Company, Zanesville, Ohio.

Cyclone #14 standard blast hole drill. Wood frame, equipped with Wisconsin 22 h.p. air-cooled engine. Mounted on International 3-ton truck. Includes 225' new manila rope as well as tools. Price $1000. Parker Bros., R. D. #2, Sharon, Pa.

STAR 55 drill complete with lines and 4" tools, engine rebuilt in December. Mounted on 1948 GMC truck FC303 with 7000 miles. Everything in top condition. Sell with or without truck or trade on 83 Star or 36-L Bucyrus. Orval Harden, Route 3, Boise, Idaho.

Reasonably priced Stone drill machine #31, only drilled four 300 foot wells. J. P. Maharrey, Rt. 1, Fort Myers, Fla.

Well equipment. Good used spudders, rotaries, tools. We sell them. We buy them. Contact us if you want to buy or sell. We rent fishing tools. Everything for well drilling. Write or phone. Pressey & Son, Pueblo, Colo.

DRILLS FOR SALE

Bucyrus-Erie 21-W drill mounted on 1½-ton truck. Reconditioned and painted, with 4" tools and cables.

No. 12 Ideco, less tools and truck, but with drilling and sand line.

Write or phone A. L. Cox & Company, Inc., 3010 Mishawaka Avenue, Phone: 43550, South Bend, Indiana.

K-4 Loomis all-steel rig with 34' telescopic derrick mounted on 1941 cab-over-engine Chevrolet truck. Complete with tools and cable. Available April 15. Price $2500. Box 448

Bucyrus-Erie 28-L, new 1949, semi-trailer mounting, good condition. With or without tools. Box 464

Bucyrus-Erie 33-W drill mounted on 1½-ton good Ford truck with cables. Machine recently overhauled and repainted. Ready to drive away. Reasonable price. Box 457

Bucyrus-Erie 22-W purchased new 1947. Type "E" semi-trailer mounting. Buda Hp-217 gasoline engine. Casing reel, spooling device, tool guide and fan blower. Also drilling tools, 5⅝" diameter holes, including swivel rope socket, jars, 4"x18' stem, drill bits, tool wrenches, dart valve bailer, etc. Drilling cables also included. All first-class condition. Located Florida. Will load on freight car. Machine operating every day. Priced to sell. F. L. Thompson, 120 Bayless Ave., Florence, Alabama. Phone 1659W.

Bucyrus-Erie 22-W drill complete with derrick hoist, spooling device, casing reel, starter and generator, mounted on 1940 Chevrolet cab over truck, two speed axle. Machine and truck in good condition. Price complete for machine and truck $5000. Hoeg and Ames, Lincoln, Iowa.

Bucyrus-Erie 21-W drill mounted on 1935 Ford truck with a complete string of 6" tools with 2x3-7 API threads. 500' practically new drill cable and sand line. Located southeastern Wisconsin. Box 436

DRILLS FOR SALE

Home made drilling machine for jetting and drilling, 22 h.p. Hercules motor, mounted on 1941 Ford, no cab, 32 ft. mast spring shocks—good condition. M. M. Martin, Okeechobee, Florida.

No. 16 Ideco dual rear wheel semi-trailer, with trailer landing gear, casing reel, catheads, 36' telescopic derrick. XAHU Waukesha engine, just overhauled. 500 feet ⅝" drilling cable, 500 feet ¾" sand line. Machine in good operating condition. Located Michigan. Price $3400. Box 454

Ideco No. 10 spudder mounted on 1½-ton 1940 Chevrolet truck. Only 3 years old. Power derrick hoist and electric starter. Both machine and truck in good condition. Price $2000. Located Indiana. Box 453

No 42 Sanderson Cyclone drill mounted on 1941 Mack truck.

No. 40 Sanderson Cyclone drill mounted on 1938 GMC truck. These machines and cables in best of condition and guaranteed. Cleo Enfield, Buffalo, Iowa.

33-W Bucyrus-Erie drill. Good condition. Recently overhauled. 40 H.P. motor. 38 ft. derrick. Mounted on Chevrolet 2-ton 1944 truck. Reasonably priced. Box 455

1948 Model No. 10 Ideco spudder with 31 ft. telescopic mast, Continental 4-cylinder motor overhauled, power lift on mast, mounted on 1938 Dual Wheel Chevrolet truck. Located in Central Michigan. Priced at $2200. Box 456

MISCELLANEOUS FOR SALE

FOR NEW AND USED CABLE DRILLING TOOLS AT BARGAIN PRICES, send for new list 4600 items, 75 stems, 75 bailers, sand pumps, 150 drill bits 4 to 13 inch. Largest selection in eastern states, 7 acres of bargains. TRI STATE TOOL & SUPPLY CO., Box 827, Parkersburg, W. Va.

(Continued on page 30)

MISC. FOR SALE

(Continued from page 29)

NEWLY DESIGNED Water Level Indicators for accurate determination of pumping and static Water Levels are now available from FISHER RESEARCH LABORATORY, INC., of Palo Alto, California. The new MASTER Water Level Indicator features a special low cost electrode, two conductor cable, metal tag cable calibration, a handy reel type spool, and a low cost easily replaceable battery. The use of two conductor cable makes casing or other outside connections unnecessary so that the unit functions equally well in uncased test holes or uncased hard rock wells.

PRICES: 250 ft. Master WL $37.50; 500 ft. Master WL $47.50. These prices include one extra electrode. Replacement electrodes $1.00 each. All prices f.o.b. Palo Alto, California. FREE LITERATURE. FISHER RESEARCH LABORATORY, INC., Palo Alto, California.

Entire stock of well pipe; over three thousand feet of 6", 5", 4", 3", 2" couplings and drive shoes. Clarence Chadwick, Box 14, Deford, Mich.

Complete well drilling equipment for 4 and 6" wells. 1948 6-cyl. F5 Ford truck, good shape; 20-W Bucyrus-Erie, good shape; 33-W Bucyrus-Erie, good shape; 4" bar for 6 and 8" wells with jars, socket and four 6" and three 8" drills for same 14 ft. long; 1-⅝"x 2⅝-7 API bar 12 ft. long with jars, socket and two 4½" drills; two 5" drills and four 6" drills; 1½x2¼" bar, jars, socket and three 3 ft. drills bought new last year; bar for 3" wells 16 ft. long, jars, swivel socket and two 3" and one four inch drill; 4" and two 6" drive heads, also one four and six inch screw drive heads. Jacks-pulling, 4 and 6" collars; two 25-ton and two 10-ton jacks; 6 or 8 chain tongs for 4 to 8" pipe, various other small tools. Also about $1000 worth of stainless steel and brass screens. Also about $3000 worth of 1, 2, 3, 4 and 6" pipe. Carl Bolliger, Fairbury, Ill.

MISC. FOR SALE

200 Amp. Lincoln portable welder with idling device. In excellent condition. $485. J. Bolliger Sons, Fairbury, Ill.

EQUIPMENT WANTED

Wanted: We buy good used well drilling equipment, spudders, rotaries, core drills, tools. Everything for well drilling and well service. Pressey & Son, Pueblo, Colo.

Wanted: 6" drill for 3" diameter bar 1½"x2¼"-8 API. Good used welder 200 or 250 amp capacity, 4 cyl. V-Type motor preferred. Also sub for pin 1½"x2¼"-8 API to box 1⅝x2⅝"-7 API. Carl Bolliger, 411 East Oak, Fairbury, Ill.

Wanted: Swage for 4" diameter wells for Johnson brass screen. Also one for 6" wells brass screen. Carl Bolliger, 411 East Oak, Fairbury, Illinois.

HELP WANTED

Experienced driller wanted by a well established firm of 43 years in the Mid-West. Excellent working conditions. New Equipment. Box 460

Experienced driller wanted to operate Bucyrus-Erie machines for drilling water wells. Must be reliable and sober. Box 463

Experienced water well driller for work in northern Illinois. Must be sober and furnish suitable references. Steady work. Salary and commission or straight salary. Should average $80 to $100 per week. Box 466

HELP WANTED

Wanted: Hard rock driller that can sharpen and temper bits on the job. Share basis, but must work on trial by the hour until I am satisfied you know what you are doing. No drunks need apply. H. E. Shirley, Stephenson, Va. Phone Winchester 8375.

Representatives Wanted

MANUFACTURERS' REPRESENTATIVES: Old established manufacturer of domestic electric pumps, water softeners and electric drinking water coolers has openings in several areas. Territories newly open include Chicago and Detroit, Toledo; also, Kentucky and the Carolinas, Georgia, Alabama, and Mississippi. Box 461, c/o THE DRILLER.

POSITIONS WANTED

Competent driller wants steady work with a dependable company or contractor. Long experience on drilling and can set and pull screens. Can give references. Write: 36 East Main Street, Middleboro, Mass.

Experienced driller seeking job somewhere in the mid-west, south or north. Age 32, family man and don't drink. Box 449

PARTNERSHIP WANTED

Established my own pump and drilling business in Northern Indiana in the Spring of 1922. Have a light cable tool rig truck mounted, rigged for jetting 2" and 3" wells at present, also have small shop tools and office equipment, enough to carry on a two or three man business. Have done both rock and drift drilling and can handle anything in the domestic pump line. Am 54 years of age, would like to make a profit sharing,or partnership hookup with a driller, located in 2" to 4" territory, preferably in a small town. Box 462

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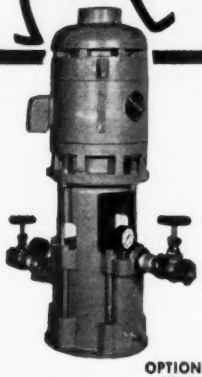

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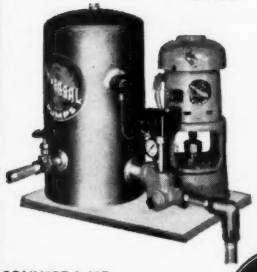

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The Driller

The monthly magazine for water well drillers

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